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DISCLAIMER

The safety devices and other controls provided in this equipment will perform reliably when operated, maintained, and repaired in accordance with the instructions of this manual.

Safety devices must be checked periodically and reset, repaired, or replaced as necessary to ensure that they will operate reliably. Equipment and parts that are broken, missing, badly worn, distorted or contaminated should be replaced with appropriate GUIDO RAYOS X parts. The equipment or its components should not be modified without the approval of the manufacturer.

The Manufacturer disclaims all responsability for any malfunction of this equipment resulting from faulty operation, maintenance or repair, or if any of its components are damaged or modified by anyone other than the manufacturer.

I. DESCRIPTION

The NESTORET Incubators are designed for the hospital where isolation of the newborn is a prime objective. All surfaces are easily accessible for cleaning.

The incubator consists of a transparent hood mounted on a body unit wich contains a heating pack, a heat circulation system, a humidity system, an air filter unit and an infant bed wich is adjustable for Trendelenburg, Fowler and Examination positions.

With the front door open, the bed slides out for examination procedures without becoming disengaged or falling. For such purpose, place the bed on up position by rotating backwards the two tilting knobs located at both sides of the Incubator base, then slides the bed out gently until it stops, its security design will avoid to fall.

A cabinet, mounted on casters and having storage space for accessories (except the BASIC Version), supports the incubator. The incubator includes an I.V. stand.

I.1 HOOD

Transparent, incorporates six hand hole ports, thermometer and a front opening door.

The six hand hole ports have soft selfadjusting plastic sleeves (optional) wich are protected from room contamination by elbow opening clear molded doors.

The fold-down front door permits maximum access to the infant when in-hood procedures are required.

I.2 HUMIDITY SYSTEM

The humidity system consists of a "Water Fill & Drain" unit, a humidity control knob, a water reservoir, and a connecting rubber tube.

The "Water Fill & Drain" unit, which is mounted in the left side of the incubator, is made of translucent plastic so the water level in the incubator is visible at all times.

The humidity control knob is mounted on the left side of the incubator.

The rubber tubing in the humidity system is made of silicone rubber and is autoclavable.

The humidity reservoir and cover are easily removed from the incubator, and can be autoclaved.

I.3 FILTER UNIT

The filter unit consists of filter pads, cover and oxygen inlets.

The filter housing incorporates the 35% oxygen limiting inlet.

The filter consists of three pads and will remove all air-borne particles.

The cover enables the operator to visually inspect the filter.

I.4 CABINET

Its compartments enables the storage of accessories, etc. Only the BASIC Version has no storage capability.

Foot brakes are provided on the two front casters in order to lock the wheels.

I.5 IV STAND

Mounted at the left on the rear side, its height is adjustable.

II. OPERATION

II.1 HUMIDITY CONTROL

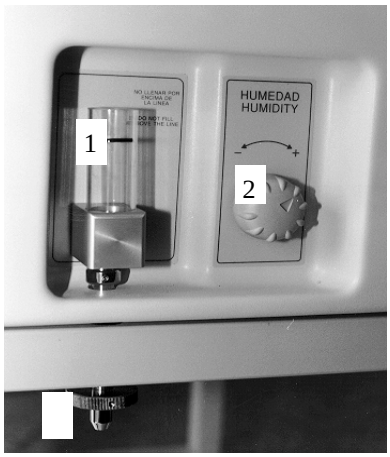
The humidity control system provides a range of humidities from closed (-) to open (+). Humidity condensate will depend on the difference in room temperature and incubator temperature.

Fill to the gauge line (1.2 liters aprox). Set the humidity control knob to the desired position. Check water level daily.

To drain the reservoir, pull and, without pulling, turn right the manifold and drain the water into a container.

1. Water level.

2. Humidity control knob.



II.2 OXYGEN SYSTEM

There are two inlets provided for controlled administration of oxygen. A 35% oxygen limiting inlet and the Up to 100% inlet are supplied with metal screw-on caps. Both inlets are located on the filter unit.

Oxygen should be administered using a "BACK PRESSURE COMPENSATED" flowmeter.

IMPORTANT: **ROUTINELY CHECK THE OXYGEN CONCENTRATION IN THE INCUBATOR.**

Tubing from the flowmeter should be connected to the 35% inlet nipple when the oxygen concentration in the incubator is to be limited to 35%. The 35% inlet will limit the oxygen concentration in the incubator regardless of the flow. For a fast increase of the oxygen concentration (up to 35%) in the incubator, flows as high as 20 to 30 l.p.m. can be used; however, for economy of operation and to obtain concentrations in the

35% range, a flow of 3 l.p.m. is recommended.

When oxygen concentrations above 35% are required, the tubing from the flowmeter should be connected to the Up to 100% inlet and the 35% inlet should be capped. Oxygen administered through this inlet will produce concentrations in the incubator of from 40 to Up to 100% depending on the rate of flow. Oxygen concentrations should be checked and the flow of oxygen increased or decreased until the desired concentration has been reached.

When high oxygen concentrations are required, the following steps should be taken:

- The water reservoir should be filled with water to the fill line.
- Air filters should be clean.
- the vents on the sides of the hood should be closed.

CAUTION: DO NOT USE CONVENTIONAL OILS AND GREASES IN OXYGEN SERVICE EQUIPMENT BECAUSE OF POTENTIAL FIRE HAZARD. USE SPECIAL OXYGEN SERVICE LUBRICANT.

WARNING: OXYGEN CONCENTRATIONS HIGHER THAN 40% CAN INCREASE THE RISK OF RETROLENTAL FIBROPLASIA (RETINOPATHY OF PREMATURITY). IT IS PROBABLE THAT EVEN CONCENTRATIONS OF 40% OXYGEN (FORMERLY CONSIDERED SAFE) COULD BE DANGEROUS FOR SOME INFANTS.

FLOW SETTING:

Set the flow at the approximate concentration rates stated here below

II.3 FRONT PANEL (DESCRIPTION AND FUNCTIONS)

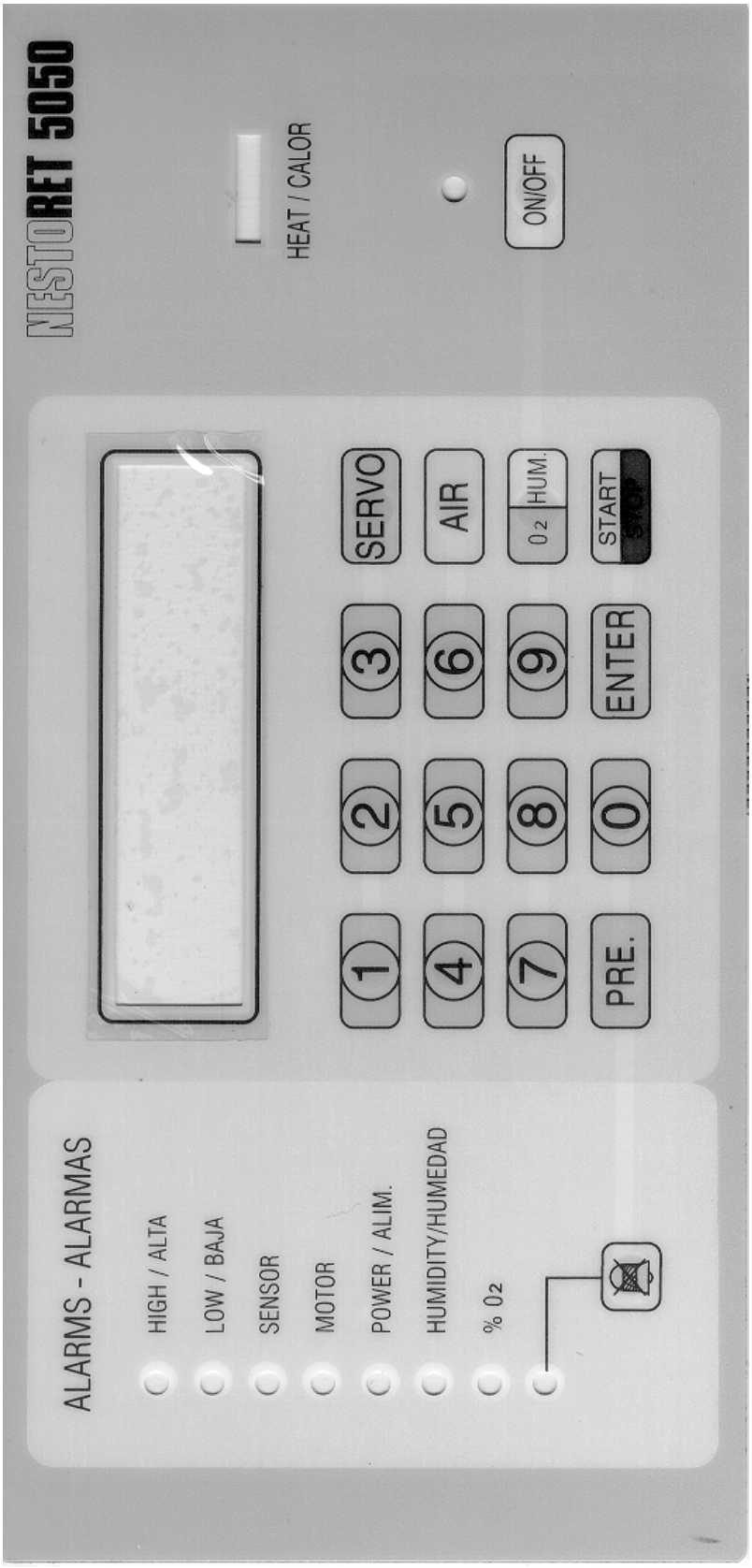
II.4. HEATING PACK.

3 L P M	for concentration of 40 - 50%
5 L P M	for concentration of 55 - 65%
10 L P M	for concentration of 75 - 85%

IMPORTANT: BEFORE USING THE INCUBATOR WITH A PATIENT, IT IS

NECCESSARY TO CHECK ITS GOOD PERFORMANCE CONDITIONS, AS WELL AS THOSE FROM THE ACCESSORIES AND OPTIONS.

(1)	HEAT/CALOR	Indication of heating device operation
	ON/OFF	Heating control switch
(2)	LCD	Display information, messages, etc.
	SERVO	Patient Temperature operation mode
	AIR	Air temperature operation mode
	STAR/STOP	Start/Stop operation
	1...0	Numerical sensitive keypad
	ENTER	Confirm the set values
	PRE	Preheating
	O2/HUM	Select Oxygen or Relative Humidity readout
(3)	HIGH/ALTA	High Temperature alarm
	LOW/BAJA	Low Temperature alarm
	SENSOR	Sensor failure alarm
	MOTOR	Air Circulation alarm
	POWER/ALIM.	Power failure alarm
	HUMIDITY / HUMEDAD	High or Low Relative Humidity alarm
	% O2	Hihg or Low Oxygen alarm
		Silence alarms


NESTORET 5050
HEAT / CALOR
ON/OFF
ALARMS - ALARMAS
HIGH / ALTA
LOW / BAJA
SENSOR
MOTOR
POWER / ALIM.
HUMIDITY/HUMEDAD
% O2
1
2
3
SERVO
4
5
6
AIR
7
8
9
O2 HUM.
PRE.
0
ENTER
START
STOP

A. TO OPERATE:

To start operation, plug the unit to the mains (check voltage) and press the **I/O** switch located at the right side of the trolley.

Press the **ON/OFF** key at the front panel, the LCD will display **"GUIDO RAYOS X"**, immediately afterwards the Incubator will perform a selftest of all its circuitry.

IMPORTANT: When the Incubator is operated for the first time when its installation, it is neccessary to calibrate the Oxygen sensor as it is described at the page 18 in the present Manual.

B. TO PREHEAT:

CAUTION: BEFORE TO USE THE INCUBATOR WITH THE NEWBORN, PREHEAT THE UNIT FOR A BETTER COMFORT OF THE NEWBORN AND AN ACCURATE PERFORMANCE. PREHEATING PERIOD OF TIME DEPENDS ON ENVIRONMENTAL TEMPERATURE. IF PREHEATING MODE IS NOT DESIRED, THE OPERATION MODE, AIR OR SERVO, CAN BE DIRECTLY SELECTED.

Pressing any key the LCD will display,

```
AIR=__._ ºC
SELECT MODE
```

Press the key "**PRE**" to start the preheating until to reach aproximately the factory preset temperature (28 ºC). In the meantime the LCD will display

```
AT=__._ ºC (__._ ºC)
PREHEATING
```

After "=" symbol we can find present temperature.

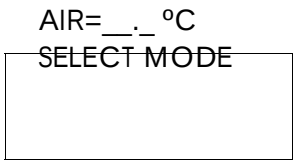
It is possible to modify preset preheating temperature in order to reach a nearly temperature of the normal operation temperature. Proceed with following steps to change preset preheating temperature:

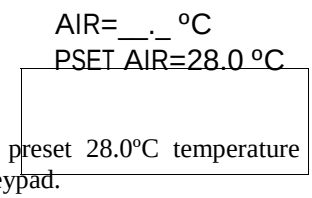
- Turn on the incubator:

```
GUIDO RAYOS X
VER  X.X
```

- Press any key :

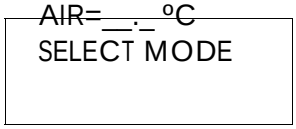
- Press **AIR** ,



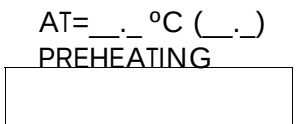


- Change old preset 28.0ºC temperature to new preheating temperature with numerical keypad.
- By pressing **ENTER**, you will confirm selection ,

- Despite it is displayed "**PRESS START**", you have to press "**ENTER**". This is because this is an special feature of NESTORET 5050 .



- Finally, press **PRE.** ,



Once the preheating temperature is reached, the LCD will display **"UNIT READY"**, to be used within a patient, displaying the temperature inside the Incubator as well as advising to the medical personnel by means of an acoustic signal. Then the Operation Mode should be selected just afterwards the newborn is placed into the Incubator.

New temperature in brackets

IMPORTANT:BY PRESSING AGAIN THE PRE. KEY, THE LCD WILL DISPLAY THE REGISTERED PARAMETERS, SUCH AS AIR TEMPERATURE (AT), PATIENT TEMPERATURE (ST), OXYGEN PERCENTAGE (OX) AND RELATIVE HUMIDITY (RH).

NOTE: TO SET OXYGEN AND RELATIVE HUMIDITY VALUES, SEE CHAPTER II.4.4.

C. TO HEAT

If Preheating Mode was not selected, proceed as follows:

Press any key, the LCD will display,

AIR=__._ ºC
SELECT MODE

To select the Operation Mode press AIR or SERVO key. AIR key corresponds to Air Control Mode; SERVO key corresponds to Servo Control Mode (patient skin temperature).

1) AIR ~~CONTROL MODE:~~

NOTE: THE DIGITAL DISPLAY INFORMS THE TEMPERATURE OF THE AIR FLOWING INTO THE HOOD.

Pressing **AIR** key, the LCD will display ,

AIR=__._ ºC
PSET AIR=__._

By means the numerical keypad, set the heating device working range ~~between 20 and 40 ºC.~~

NOTE: WHEN SETTING TEMPERATURE ENTER ALWAYS 3 DIGITS, EVEN IN CASE OF NO DECIMALS. AS EXAMPLE PRESS 3, THEN 7, THEN 0 TO SET 37 DEGRESS.

Then press **ENTER** to confirm, the LCD will display ,

AT=__._ (__._)
PRESS START

Then press **START** to start the heating. The LED bar will indicate the operation of the heating device. By reaching the selected heating range, the heating devices will modulate to keep the temperature stable.

The LCD will display the air flow registered temperature, as well as will inform, too, the set temperature, displaying ***Preset temperature in brackets*** **ACTIV ED UNIT** to inform the heating device is in operation .

AT=__._ ºC (__._)
UNIT ACTIVE

The selected heating range can be modified at any time by pressing **START/STOP** and after **ENTER** key; you will find displayed following message :

AIR=__._ ºC
SELECT MODE

Then set the new temperature by the keypad as previously explained and confirm by pressing **ENTER** key. The LCD will display the messages described above. Then press **START** key.

2) SERVO CONTROL MODE:

ATTENTION:BEFORE SELECTING SERVO CONTROL MODE PROCEED TO PREHEAT THE INCUBATOR AS EXPLAINED PREVIOUSLY IN THE II.4.2. TO PREHEAT CHAPTER.

Before anything display on the screen following message :

AIR= . ºC
SELECT MODE

Press SERVO key, the LCD will display ,

SKIN=__._ ºC
PSET SKIN=__._

Set the patient temperature between 20 and 40 ºC by means of the keypad, confirm by pressing ENTER key.

NOTE: WHEN SETTING TEMPERATURE ENTER ALWAYS 3 DIGITS, EVEN IN CASE OF NO DECIMALS. AS EXAMPLE PRESS 3, THEN 7, THEN 0 TO SET 37 DEGRESS.

The LCD will display ,

ST=__._ ºC (__._)
PRESS START

NOTE: ST MEANS PRESENT TEMPERATURE. TEMPERATURE IN BRACKETS MEANS PRESET TEMPERATURE.

Then press **START** to start the heating. The LED bar will indicate the operation of the heating devices. By reaching the selected patient temperature, the heating devices will modulate to keep the temperature stable.

The LCD will inform the patient temperature and the selected one. By displaying **UNIT ACTIVE** will inform the heating device is on operation.

The set patient temperature can be modified at any time by pressing **START/STOP** and after **ENTER** key; you will find displayed following message :

AIR=__._ ºC
SELECT MODE

Press SERVO key, the LCD will display

SKIN = __._ ºC
PSET SKIN = __._ ºC

Then set the new temperature by the keypad as previously explained and confirm by pressing **ENTER** key. The LCD will display the messages described above. Then press **START** key.

ATTENTION: IF A MOMENTARY PAUSE WITHOUT CHANGING THE SET PATIENT TEMPERATURE IS REQUIRED, PRESS STOP KEY. PRESS START KEY TO CONTINUE OPERATION. THE INCUBATOR WILL OPERATE ON THE SAME OPERATION MODE AND PARAMETERS ALREADY SET.

D. OXYGEN AND RELATIVE HUMIDITY

A) The NESTORET 5050 Incubator monitors the Oxygen percentage inside the hood and the Relative Humidity.

To set the alarm levels for above mentioned parameters proceed as follows (always before to place the infant into the Incubator and before to deliver any oxygen flow, due to when calibrating at 21% if the concentration is higher the calibration got will be erroneus).

B) To see in the LCD the O2 and humidity parameters, press the O2/HUM key when the incubator is activated in the servo or manual mode ever since no alarm optical/ acustic is activated

NOTE: WHEN SELECTING PARAMETERS YOU MUST START FROM "SELECT MODE" SCREEN :

AIR=__._ ºC

SELECT MODE

Press the **O2/HUM** key, the LCD will display ,

```
AIR=__._ ºC
1=OXYG, 2=HUMID
```

To set the Oxygen range press **1**, the LCD will display

```
AIR=__._ ºC
OX: 1=PRG, 2=CAL
```

Then, press **1** again ,

```
AT=__._ ºC (__._)
PRESET OX %=21.0
```

By means of the keypad set the desired value. Press **ENTER** key to confirm.

Once again you will find following screen :

Real oxygen percentage in brackets

```
AIR=__._ ºC
1=OXYG, 2=HUMID
```

Finally press **ENTER** to confirm values.

To calibrate the Oxygen Sensor, press the **O2/HUM**. key, the LCD will display ;

```
AIR=__._ ºC
1=OXYG, 2=HUMID
```

NOTE: DUE TO THE WEAR OF THE OXYGEN CELL SENSOR IT IS RECOMMENDED TO PERFORM PERIODICALLY ITS CALIBRATION PROCEDURES

Check the Oxygen Sensor is pluged on the front panel and its housing is not located inside the Hood, allow to stabilize.

Press **1**, the LCD will display,

```
AIR=__._ ºC
OX: 1=PRG, 2=CAL
```

Press **2**, the LCD will display ,

OX CALIBR (21 %)
PRESS ENTER

By pressing **ENTER**, the Oxygen Sensor is already calibrated with a new reference.

New screen displayed ;

AIR=__._ ºC
OX: 1=PRG, 2=CAL

To set the *Relative Humidity* procedure is the same we have explained to Oxygen values, but selecting 2=HUMID, instead of 1=OXYG.

II.5. ALARMS

The NESTORET 5050 Alarm System informs to the medical attendant of any incidence may occur. The alarm is visible and audible.

NOMENCLATURE OF SYMBOLS IN ALARM MESSAGES

+ Excess temperature alarm
- Failing temperature alarm
= Temperautre O.K.
* Desactive sensor

A) AIR CONTROL MODE

1. SENSOR ALARM:

In case of air sensor failure or it gets disconnected or out of range; the SENSOR Alarm will activate the corresponding LED and buzzer, the alarm cannot be silenced. The LCD will inform to the attendant displaying ,

* ALARM *
AIR SENSOR

The Incubator is now out of service. Call to any authorized Service engineer.

2. LOW TEMPERATURE ALARM:

Is activated when temperature reaches aproximately 1 ºC below the preset temperature (See paragrap II.10 to cahnge preset temperature alarm range). "**LOW**" alarm LED will lit, to silence acoustic alarm press SILENCE key. The LCD will display

```
* ALARM *
AT - RH OX
```

The alarm can be silenced by pressing the SILENCE key. If SILENCE was pressed and the alarm conditions remain during a period of ten minutes, the alarm will be activated again.

IMPORTANT: CHECK THE HOLE DOORS, HOOD AND TUBING PORTS ARE PROPERLY CLOSED. CHECK THE HEAT LED BAR IS LITTING (THE MICROPROCESSOR CONTROLS THE HEATING DEVICE); IF CONTRARY, UNPLUG THE UNIT FROM THE POWER SOURCE, REMOVE THE PATIENT FROM THE INCUBATOR AND CALL TO THE AUTHORISED SERVICE ENGINEER.

3. HIGH TEMPERATURE

Is activated when the temperature reaches aproximately 1 ºC higher than the preset temperature (See paragrap II.10 to cahnge preset temperature alarm range). "**HIGH**" alarm LED will lit and the LCD will display ,

```
* ALARM *
AT + RH OX
```

to silence acoustic alarm press SILENCE key.

Check if heat sources are close to the Incubator location, if positive keep them away. If the alarm is still effective unplug the unit from the power source, remove the patient from the incubator and call to the authorised service engineer.

B) SERVO CONTROL MODE

1. SENSOR ALARM:

Informs when a failure of the skin probe or if it gets disconnected or out of range. The Alarm will activate the corresponding LED and buzzer. The LCD will display ,

```
* ALARM *
SKIN SENSOR
```

being possible to silence. The Incubator is now out of service. It can be used on Air Mode if no any circunstances or alarms avoid it, in case it is absolutely needed switch to Air Operation Mode and call to the authorized service engineer.

2. LOW TEMPERATURE

Is activated when temperature reaches aproximately 1 ºC below the preset temperature (See paragrap II.10 to cahnge preset temperature alarm range). "LOW" alarm LED will lit and the LCD will display,

```
* ALARM *
ST - RH  OX
```

to silence acoustic alarm press SILENCE key. If SILENCE was pressed and the alarm conditions remain during a period of ten minutes, the alarm will be activated again.

IMPORTANT: CHECK THE CONDITIONS OF THE PATIENT. CHECK THE HOLE DOORS, HOOD AND TUBING PORTS ARE PROPERLY CLOSED. CHECK THE HEAT LED BAR IS ON (THE MICROPROCESSOR CONTROLS THE HEATING DEVICES); IF CONTRARY, UNPLUG THE UNIT FROM THE POWER SOURCE, REMOVE THE PATIENT FROM THE INCUBATOR AND CALL TO THE AUTHORISED SERVICE ENGINEER.

3. HIGH TEMPERATURE

Is activated when the temperature reaches aproximately 1 ºC higher than the preset temperature (See paragrap II.10 to cahnge preset temperature alarm range). "HIGH" alarm LED will lit and the LCD will display ,

```
* ALARM *
ST + RH  OX
```

to silence acoustic alarm press SILENCE key. HEAT LED will switch off.

Check the conditions of the patient. Check if heat sources are close to the Incubator location, if positive keep them away.

If the alarm is still effective, unplug the unit from the power source, remove the patient from the incubator and call to the authorised service engineer.

C) POWER FAILURE

Is activated when failure of the power from the battery or from the mains. The alarm circuit includes a rechargeable battery and operation conditions of it must be checked periodically.

D) FAN FAILURE (AIR CIRCULATION)

Is activated when the fan stops or its performance is below the normal operating requirements. The alarm will activate **MOTOR** LED and the LCD will display ,

```
* ALARM *
MOTOR ERROR
```

not being possible to silence it. Unplug the unit from the power source, remove the patient from the incubator and call to the authorised service engineer.

E) HUMIDITY ALARM.

Is activated when the registered Relative Humidity is out of the set range. The **HUMIDITY** LED will lit and the LCD will display ,

```
* ALARM *
ST  RH ±  OX
```

(HIGH(+) or LOW(-), depending on the registered value). The alarm can be silenced. This alarm does not interfere on the operation of the Incubator. If the alarm conditions remain during a period without turning off the SILENCE key, ten minutes later, the alarm will be activated again.

To switch off the alarm operation, if desired, refer to chapter **II.6 "SENSORS ACTIVATION AND DEACTIVATION".**

F) HEATING ALARM.

Is activated when correspondent sensor is disconnected or out of range. The Alarm will activate the corresponding LED and buzzer. The Incubator is now out of service.

Unplug the unit from the power source, remove the patient from the incubator and call to the authorised service engineer.

```
* ALARM *
HEATING ERROR
```

G) OXYGEN ALARM.

Is activated when the registered Oxygen percentage inside the Hood is out of the set range. The %02 (Oxygen) LED will lit and the LCD will display ,

```
* ALARM *
ST  RH  OX ±
```

(HIGH (+) or LOW (-), depending on the registered value). The alarm

can be silenced. This alarm do not interfere on the operation of the Incubator. If the alarm conditions remain during a period of ten minutes, the alarm will be activated again.

To switch off the alarm operation, if desired, refer to chapter **II.6.** "**SENSORS ACTIVATION AND DEACTIVATION**".

If any alarm has been silenced the display will work intermitently, in order to see better the situation of the silenced alarm.

II.6. SENSORS ACTIVATION AND DEACTIVATION

The applications program of the NESTORET 5050 Incubator allows to the user, at any moment, to deactivate or activate the sensors of the monitored parameters, if required for calibration procedures or non essential parameters cancellation (Oxygen and/or Relative Humidity). If the Incubator is switched off, proceed as follows:

Press **I/O** switch, located at the side of the trolley. Press **ON/OFF** key at the front panel. The LCD will display ,

GUIDO RAYOS X
VER X.X

then type sequentially:

- **SILENCE** key
- 7388
- **SILENCE** key.
- ENTER

then the LCD will display ,

MAINT: 0 SW, 1 LNG
2 SEN, 3 DIS, 4 RNG

Press **2** key and the LCD will display all coded available sensors and their status as follows,

1RH 2AT 3ST 4HT
5FA 6OX 7A2 8AI

(at the right side of each coded sensor "+" or "-" will display, meaning activated or deactivated respectively)

(RH=Relative Humidity, AT=Air Temperature, ST=Skin Temperature, HT=Heating Device Temperature, FA=Fan, OX=Oxygen, A2 and A1 are auxiliary options for future implements)

To activate (+) or deactivate (-) press the corresponding figure key of the sensor. Proceed with any sensor you want to activate or deactivate, then press ENTER to confirm.

The LCD will display ,

MAINT.: 0 SW, 1 LNG
2 SEN, 3 DIS, 4 RNG

pressing again **ENTER** the LCD will display the initial message. You can proceed to set the Operation Mode, etc. as above described.

II.7. SOFTWARE LANGUAGE

The applications program of your NESTORET 5050 is delivered from factory in two languages: english and spanish. At factory your incubator has been preset to english, if you want to switch to the language, proceed as follows:

Press **I/O** switch, located at the side of the trolley.

Press **ON/OFF** key at the front panel. The LCD will display ,

GUIDO RAYOS X
VER X.X

then type sequentially:

- **SILENCE** key
- 7388
- **SILENCE** key.
- ENTER

then the LCD will display,

MAINT.: 0 SW, 1 LNG
2 SEN, 3 DIS, 4 RNG

Press **1** key the LCD will display ,

1=ENGLISH VER
2=SPANISH VER

press the corresponding key to the selected language and confirm by pressing **ENTER**.

II.8. CHANGE OF DISPLAY TYPE

Press 3 key when applications programm is selected, display type will be activated,

1 DISPL 16 CARS
2 DISPL 20 CARS

for LCD equipment press 1; for luminiscent display press 2.

II.9. ON/OFF SWITCH (SW) ACTIVATION

Press 0 key when applications programm is selected. The display will show:

WITH ON/OFF
WITHOUT ON/OFF

For equipments with ON/OFF switch on front panel keypad, press the ON/OFF key, selecting WITH ON/OFF option.

II.10. CHANGE OF TEMPERATURE ALARM RANGE (HIGH / LOW)

Press 4 key when applications programm is selected. The display will show:

RNG.TMP (0.1 ÷ 2.0)
R= __._ , H=

Preset value of temperature Range (R) (High / low) is 1 ºC. To this value corresponds a hysteriris value (H) of 0,4 ºC.

To change the preset value (R) (between 0,1 ºC and 2,0 ºC), by means of the numerical keypad, set the required value and press ENTER, the display will show the corresponding hysteresis value (this value H can not be changed).

Then press ENTER again to accept the new values (R) and (H).

those used in window washing) and to smaller areas with a clean, soft cloth, sponge, or chamois. DON'T use boiling water. DON'T use strong solvents such as ether.

Drying

If it is necessary to dry the washed surface, use a clean damp chamois. DON'T rub hood with a dry cloth.

III.4 BED TRAY

The bed tray can be autoclaved at 15 p.s.i. (1.05 kg/cm2) for 20 minutes. It must be laid upside-down on a flat surface during sterilization to prevent distortion.

III. MAINTENANCE

III.1 CABINET

The cabinet can be cleaned with a damp cloth and soap. It must be dried immediately afterwards.

III.2 FILTER

The filter should be replaced every three months. Pull gently from the Up to 100% Oxygen inlet and press it gently towards the Incubator side until the panel can be removed. Remove the filter pads and replace with the new ones. Replace the panel and apply the self-adhesive tab (from the filter instruction sheet) to the face of the panel. Note the date of replacement of the filter pads on the tab.

III.3 HOOD

The hood can be removed from the body loosening the four thumb screws which hold the bed spacers in place. Loosen the thumb screws, disengage the bed spacers from the hood, disengage the two screws from the sensor housing and carefully remove the hood.

ATTENTION: BEFORE PROCEEDING, UNPLUG THE TEMPERATURE AND AIR/HUMIDITY SENSORS ASSEMBLY LOCATED AT THE LEFT SIDE OF THE HOOD. ONCE CLEANED, PLUG IT AGAIN.

The hand hole doors can be replaced by unscrewing the hinge pin and removing the door.

The hood can be cleaned with soap and water. Accepted desinfectants such as Wescodyne, Warexin, etc., may be used. NEVER use ether, alcohol or acetone to clean the hood.

Dusting

Dust and clean hood with a soft, damp cloth or chamois. Wipe the surface gently. DON'T use gritty cloths.

Washing

Wash with mild soap or detergent and water. DON'T use scouring compounds.

Use plenty of water. Apply to large areas with a bristle mop (such as

III.5 BODY

It is double walled. The outer wall is made of High Impact ABS, the inner wall is made of aluminium with epoxy painting.

When all removable components of the incubator have been taken out, the body may be cleaned with soap and water and may be desinfected using a commercially available cold sterilizing solution. Be sure to use a solution that does not affect to the painting.

CAUTION: DO NOT USE ANY CLEANING AGENT CONTAINING ABRASIVE MATERIALS. HOT CAUSTICS, HIGHLY CHLORINATED SOLVENT, OR ANY AGENT CONTAINING IODINE FULL STRENGTH SHOULD BE AVOIDED AS DISFIGURATION OF THE EPOXY COATED ENAMEL COULD RESULT.

DO NOT GAS OR STEAM STERILIZE THE BODY.GAS AND STEAM STERILIZATION TECHNIQUE COULD CAUSE BLISTERING OF THE EPOXY FINISH AND OF THE HIGH RESISTANT ABS OUTER WALL.

III.6. BATTERY FROM POWER FAILURE ALARM

CAUTION : CHECK PERIODICALLY THE BATTERY FROM THE POWER FAILURE ALARM.

To perform it, just unplug the cord from the mains meanwhile the Incubator is under operation (the alarm will activate the corresponding Power alarm LED and the buzzer).

IMPORTANT: THE NESTORET 5050 INCUBATOR INCLUDES THE MOST ADVANCED ELECTRONIC DESIGN, INSURING GREATER RELIABILITY IN ITS OPERATION. ANY TECHNICAL SERVICE PERFORMED IN ITS MAINTENANCE REQUIRES PROPERLY TRAINED, QUALIFIED PERSONNEL.

A).- MAIN MODULE

For a better explanation and understanding, the Main Module has been clasified in the following blocks:

- Power Supply
- Microcontroller
- A/D Converter and Multiplexer
- Sensors

IV. SERVICE.

Service must be performed by qualified and authorized service personnel. Call to the manufacturer or its Agent for any service you may require.

To accede to the heating module and/or to the printed board it is neccessary to open the Incubator Base front.

Proceed as follows:

- Unscrew the small screws from the front lower part at both sides of the Incubator Base.
- From inside the Hood, unscrew the front screws from the hinges located on the lower corner of the Hood sides. The other two screws located besides the above ones must be slightly loosen.
- Pull gently upwards the front door. The pins of the hinges will get out from the Base.
- Pull outwards from both ends the whole front Base. The front will tilt leaving the access free.

In case to need more free access to replace any part on the heating module proceed as follows:

IMPORTANT: BEFORE TO PROCEED AS DESCRIBED BELOW, SWITCH OFF THE INCUBATOR POWER SUPPLY (RIGHT SIDE ON THE TROLLEY) AND UNPLUG THE CORD FROM THE MAINS.

Unplug the wiring multiconnector from the printed board. Check the ground wire is also out from the screw on the heating module.

IMPORTANT: BE SURE TO UNPLUG FROM THE MULTICONNECTOR THE TWO LABEBED WIRES OF THE BLACK CABLE FROM THE POWER SUPPLY.

Unscrew the four nuts that hold the heating module into its location. You can now to withdraw it carefully. Proceed by pulling it outwards from its location and turning it gradually, facing to the top.

ATTENTION: WHEN ABOVE PROCEDURES, TAKE CARE NOT TO DISCONNECT ACCIDENTALLY ANY WIRE, ETC. IF IT HAPPENS PROCEED TO SOLVE IT ACCORDING TO THE WIRING DIAGRAM.

IV. 1. ELECTRONIC CIRCUITS

The following describes the electronic operation of the 5050 module and includes electronic schematics, adjustments guide and instructions for proper technical maintenance.

- Power Drivers

1. Power Supply

Tension from Transformer (15-0-15 V AC) is rectified by the **PR1** diodes bridge. +5 Vcc power is got by means of the **RE2** (7805) Tension Regulator and its filters. The **R74** Resistor dissipates the generated power when a power fall to the input of the **RE2** Regulator.

+15 Vcc power is got by means of the **RE3** (7815) Tension Regulator and its filters.

-15 Vcc power is got by means of the **RE4** (7915) Tension Regulator and its filters.

2. Microcontroller

A DALLAS DS5000 Microcontroller checks and controls all Incubator functions. An Oscillator/Clock circuit composed by X1, C9 and C10 generates a 12 MHz frecuency.

The Microcontroller reads the keypad via the U2 Keypad Decodifier. Any time a key is pressed, the Decodifier transfer the data to the Microcontroller which collects the information of the event by the INT0 interruption. Besides, it transfers a signal to the buzzer, generating an acoustic signal any time a key is pressed.

A Microcontroller function is to display the data on the **J6** LCD, as well as to activate the alarm LED's **L2 ... L8**. Also it activates the **ARL1** LED's bar to indicate the heat output generation. **U10** and **U15** Integrated Circuits are latches of those signals being reloaded each 10 ms.

The Microcontroller collects periodically the data from all the sensors from the A/D **U11** Converter.

3. A/D Converter and Multiplexer

All signals generated by the sensors are multiplexed by the **U12** that, up on requirement of the Microcontroller, will write the data to the sensor multiplexer to be converted into digital. At present six of the eight Multiplexer inputs are used being the **J11** and **J12** connectors free for future implements.

That signal at the Multiplexer output is drived to the eight bits A/D **U11** Converter. It converts the input analogic data and performs its conversion into digital at its data output, being readed by the Microcontroller that performs the conversion from digital data into the displayed values (Temperature, % Humidity, % Oxygen, etc.). The **TP5** reference voltage and the **TP3** offset are respectively adjustable by the **P6** and **P9** potentiometers.

4. Sensors

The NESTORET 5050 Incubator has the capability to read signals generated by an Air Temperature sensor, by a Skin Temperature sensor, by a Humidity sensor, by an Oxygen Concentration sensor, by a Heating Device Temperature sensor and the Fan Operation by HALL effect.

The Air Temperature Sensor is amplified by **U7** being possible to adjust the **P5** gain and the **P13** offset.

The Skin Temperature sensor is isolated from the circuit by means the **U8** isolation amplifier that provides a 2500 Vpp isolation. At the output of this amplifier the **U9** circuit amplifies the sensor isolated signal being possible to adjust the gain and offset by the **P14** and **P8** respectively.

The Humidity sensor is a capacitive sensor with signal conditioning. It makes a correction in the relative humidity depending on the temperature. The humidity correction factor can be adjust by the **P1** potentiometer of the humidity board. Gain level is adjustable by **P2**.

The signal generated by the Oxygen Concentration sensor is amplified by **U16**, being possible to adjust the gain and offset by **P12** and **P7** respectively.

The Heating Device Temperature sensor is amplified by **U13** being possible to adjust the **P10** gain and **P11** offset.

When fan blades rotation, the HALL effect sensor generates a pulse. Those pulses are integrated by **C19**, **D8**, **R66** and **C21**, having at **TP9** a proportional power to the fan rotating speed.

The **J11** and **J12** Connectors are free to receive any other analogic signal that could be used on future implements. At present these two inputs are deactivated in the activation/deactivation panel from the service program.

5. Power Drivers

The heating device and the fan are activated by their corresponding driver. The signal coming from the Microcontroller is isolated by the **OPT1-OPT2** Optocoupler that feeds the **TRC1-TRC2** Triac supplying power to the heater and to the fan. The heater is activated and deactivated upon requirement of the system. The fan is activated/deactivated when pressing **ON/OFF** key.

IV.2. ADJUSTMENTS

Here below are described the adjustment instructions to perform on the NESTORET 5050 in case of replacement of some of the components, such as sensors, circuits, etc., due to a failure.

To perform the adjustments properly the following instruments are required:

- Digital Voltmeter (DVM).
- Temperature and Oxygen Concentration Simulator (SIM50TO).
- Humidity Concentration Simulator (SIM50HR).

- Screwdriver.

To access the electronic circuits open the Incubator Base front as explained on this Manual.

Turn on the Incubator by pressing the **I/O** Switch located at the right side of the trolley.

Before performing the adjustments check the power from the power supply. Here below are detailed power referenced to ground **(GND -TP11)**:

POWER	TEST POINT
+ 5 Volts ± 5%	TP8
+ 15 Volts ± 5%	TP10
- 15 Volts ± 5%	TP12

Once checked, perform the adjustment according to the instructions detailed here below.

- Put DVM probes between **GND-TP11** and **TP3**. Twist **P9** Potentiometer to read 0 Volts.
- Put DVM probes between **GND-TP11** and **TP5**. Twist **P6** Potentiometer to read 1250 mVolts.
- Deactivate sensors on the Service Menu.
- Turn off the Incubator by pressing the **I/O** Switch located at the right side ofthe trolley.
- Release the connectors **J7, J8, J9, J14.**
- Connect on above connectors the wires from the Temperature Simulator (**SIM50TO**) as follows :

CABLE	**CONNECTOR**
SIM1	J7
SIM2	J8
SIM3	J9
SIM4	J14

- Set the jumper at J5 and take it off when you finish the adjustment.

Turn on the Incubator by pressing the I/O Switch located at the right side of the trolley.

Press the ON/OFF key.

Press three times the "PRE." key.

The LCD will display :

AT=00.0 PT=00.0
OX=00.0 RH=00.0

(AT: Air Temp., PT: Patient Temp., OX: Oxygen, RH: Humidity)

A. Air Temperature

- Set Simulator switch at "0".
- Set DVM probes between **GND-TP11** and **TP2**. Twist **P13** Potentiometer to read between 2 to 4 mVolts.
- Set Simulator switch at "40/99".
- Twist **P5** Potentiometer to read 40.0 ºC at the Air Temperature Display on the Incubator Control.
- Set Simulator switch at "18/21".
- Twist **P13** Potentiometer to read 18.0 ºC at the Air Temperature Display on the Incubator Control.

Because adjustments are mutual interactive, therefore have to be repeated steps 3 and 6 until to get the correct value.

Then disconnect the temperature simulator and connect again the sensors connector. Set a precision patron termometer inthe middle of the mattress, 10 cm height f. Select 37ªC as working temperature and go back to PREHEATING display.

When the temperature is stabilizated check then the air temperature (AT) is the same that shows the patron termometer. If not, adjust the potenciometer P5 till both temperatures are the same.

B. Patient Temperature

- Set Simulator switch at "0".
- Set DVM probes between **GND-TP11** and **TP4**. Twist **P8** Potentiometer to read between 2 to 4 mVolts.
- Set Simulator switch at "40/99".
- Twist **P14** Potentiometer to read 40.0 ºC at the Skin Temperature Display on the Incubator Control.
- Set Simulator switch at "18/21".
- Twist **P8** Potentiometer to read 18.0 ºC at the Skin Temperature Display on the Incubator Control.

Because adjustments are mutual interactive, therefore have to be repeated steps 3 and 6 until to get the correct value.

Then disconnect the temperature simulator and connect again the sensors connector. Set a precision patron termometer and the patient temperature sensor in the middle of the mattress, 10 cm height. Select 37ªC as working temperature and go back to PREHEATING display.

When the temperature is stabilizated check then the patient temperature (ST) is the same that shows the patron termometer. If not, adjust the potenciometer P14 till both temperatures are the same.

C. Oxygen Concentration

- Set Simulator switch at "0".

- Set DVM probes between **GND-TP11** and **TP7**. Twist **P7** Potentiometer to read 5 mVolts maximum.
- Set Simulator switch at "40/99".
- Twist **P12** Potentiometer to read 99.0% at the Oxygen Concentration Display on the Incubator Control.
- Set Simulator switch at "18/21".
- Twist **P7** Potentiometer to read 21.0% at the Oxygen Concentration Display on the Incubator Control.

Because adjustments are mutual interactive, therefore have to be repeated steps 3 and 6 until to get the correct value.

D. Heating Indication

- Set Simulator switch at "0".
- Set DVM probes between **GND-TP11** and **TP6**. Twist **P11** Potentiometer to read 5 mVolts maximum.
- Set Simulator switch at "40/99".
- Twist **P10** Potentiometer to illuminate the four first LED's on the LED Bar for heating indication at the front panel.
- Set Simulator switch at "18/21".
- Twist **P11** Potentiometer to illuminate the two first LED's on the LED Bar for heating indication at the front panel.

Because adjustments are mutual interactive, therefore have to be repeated steps 3 and 6 until to get the correct value.

E. Relative Humidity

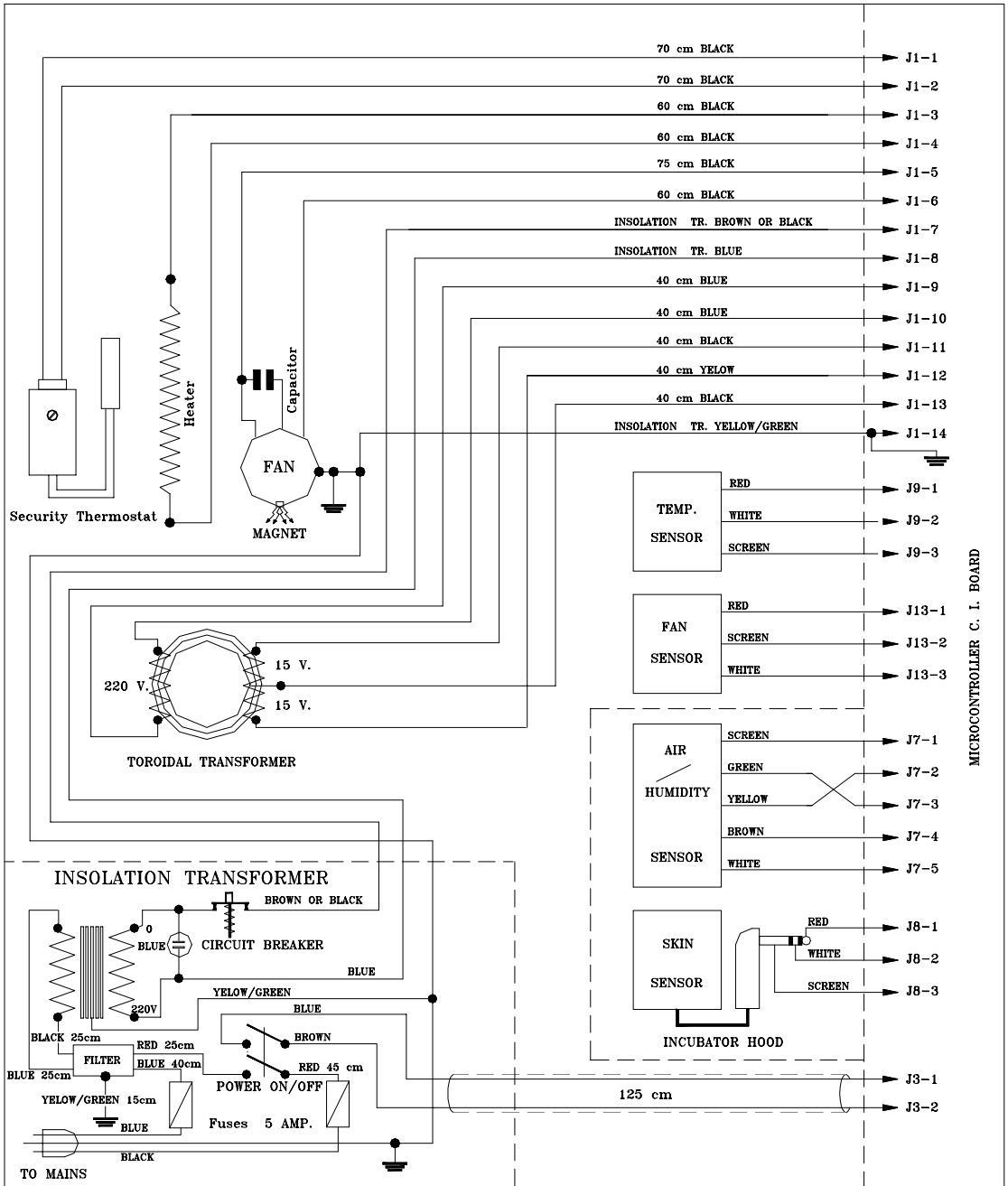
- Connect the temperature sensor in the humidity/air board.
- Connect the humidity/air board to main board with its cable.
- Turn on the incubator and set the PREHEATING mode.
- Set the DVM probes between GND-TP11 and TP1of the humidity/air board.
- Twist P1 potenciometer of the humidity/air board to read 0,465 V.
- Set the humidity simulator in the sensor connector HR.
- Set the simulator swich in the position 1 and twist P2 potentiometer of the main board till the display shows the humidity concentration given by the simulator at the position 1.
- Set the simulator swich in the position 2 and twist P2 potentiometer of the main board till the display shows the humidity concentration given by the simulator at the position 2.
- Repeat the two last steps until you get the most accurate adjustment
- Remove the simulator and set in its place the humidity sensor. Important : do not touch the pins of the sensor and the integrate circuit with the fingers. Static sensitive, use proper grounding.

F. Security Thermostat

- Select SERVO Mode following Manual instructions.
- Open the heating pack in order to accede to security thermostat.
- Twist right security thermostat axis.
- Locate the patient sensor in the middle of the mattress, 10 cm height.
- Key in 38 ºC and let the incubator reachs 37,5 ºC; Next, turn left security thermostat in order to light off heating pack bulb located on the electronic board.
- Check adjustment; Let the incubator gets cool; Proceed as explained at paragraph before to insure Thermostat has been properly adjusted.
- Close Heating pack.

NOTE : THIS ADJUSTMENT HAS BEEN MADE IN THE FACTORY AT AN AIR TEMPERATURE OF 23ºC. IF THE THERMOSTAT DON´T OPEN AT THE MENTIONED TEMPERATURE, IT WILL BE NECESSARY ANOTHER ADJUSTMENT WHERE THE INCUBATOR IS LOCATED

IV.3. WIRING DIAGRAMS, SPARE PARTS LIST



PEGAR PLANO NESTORET 5050 - 2325/1 de 10.Agosto.00
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ITEM	REF.	DESCRIPTION	VALUE		
1	0826	RESISTOR	180 Ω	1/2 W	R71, R78
2	7782	RESISTOR	1K	1/4 W	R27
3	2336	RESISTOR	1K5	1/4 W	R16
4	7768	RESISTOR	2K	1/4 W	R53, R65
5	1510	RESISTOR	2K2	1/4 W	R34, R35, R49, R50, R62, R64
6	9220	RESISTOR	4K7	1/4 W	R1, R4, R13, R17, R26, R29, R31, R36, R48, R70
7	0599	RESISTOR	5K	1/4 W	R19
8	1513	RESISTOR	10K	1/4 W	R6, R7, R8, R9, R12, R23, R25, R39, R63, R68
9	2557	RESISTOR	18K7	1/4 W	R10
10	9224	RESISTOR	20K	1/4 W	R15
11	1519	RESISTOR	22K	1/4 W	R18
12	1531	RESISTOR	68K	1/4W	R21
13	2411	RESISTOR	75 Ω	1/4 W	R2, R3, R5
14	2551	RESISTOR	75K	1/4 W	R30, R77
15	0967	RESISTOR	100K	1/4 W	R24, R32, R45, R51, R66, R67, R69, R73, R76
16	7779	RESISTOR	120 Ω	1/4 W	R72, R79, R75
17	1525	RESISTOR	330 Ω	1/4 W	R11
18	1526	RESISTOR	470 Ω	1/4 W	R14, R20
19	2146	RESISTOR	480 Ω	1/4 W	R90, R91
20	5041	RESISTOR	680 Ω	1/4 W	R37, R38, R40, R41, R42, R43, R44, R46, R52, R54, R56, R57, R58, R59, R60, R61
21	1803	RESISTOR	22 Ω	4 W	R74
22	7633	CONNECTOR 2 PIN 2.54 MALE SQUARE PIN HEADER			J4, J3, J14
23	9206	CONNECTOR 3 PIN 2.54 MALE SQUARE PIN HEADER			J8, J9, J13
24	7632	CONNECTOR 5 PIN 2.54 MALE STRAIGHT HEADER			J7
25	0935	SIL 9 PIN MALE			J2
26	2399	CONNECTOR 14 PIN 3.96 MALE SQUARE PIN HEADER			J1
27	1576	CONNECTOR 14 PIN 2.54 MALE			J6
28	7817	74C923			U2
29	2301	74HC573			U10, U15
30	1540	7805			RE2
31	2257	7815			RE3
32	2258	7915			RE4
33	7727	AD202KN			U8
34	2351	AD580			RE1
35	2407	AD711			U6
36	7807	ADC0801			U11
37	2343	ARRAY LED 10			ARL1
38	0957	COIL			CH1
39	2251	CA3140			U6, U7, U9, U13, U16
40	7749	CERAMIC CAPACITOR RASTER 5	100 nF		CD2, CD5, CD6, CD6A, CD10, CD11, CD15

ITEM	REF.	DESCRIPTION	VALUE		
41	7728	CD4051			U12
42	2345	CERAMIC CAPACITOR	1 µF		C19
43	6191	CERAMIC CAPACITOR	10 nF		C7
44	9226	CERAMIC CAPACITOR	27 pF		C9, C10
45	0976	CERAMIC CAPACITOR	100 nF		C1, C2, C3, C4, C14, C15, C16, C17, C18, C20, C23, C26, C29, C90, CD8
46	7744	CERAMIC CAPACITOR	150 pF		C13
47	1435	DIODE 1N4148			D3, D4, D5, D6, D7, D8, D9, D10
48	6217	DS5000			U5
49	0932	TANTALUM CAPACITOR	10 µF	16 V	C12,C21
50	9227	RADIAL ELECTROLITIC CAPACITOR	1 µF	25 V	C5
51	2522	RADIAL ELECTROLITIC CAPACITOR	2200 µF	16 V	C91
52	1419	RADIAL ELECTROLITIC CAPACITOR	100 µF	25 V	C27, C30
53	1421	AXIAL ELECTROLITIC CAPACITOR	470 µF	16 V	C24
54	0956	AXIAL ELECTROLITIC CAPACITOR	2200 µF	25 V	C25, C28
55	7642	RADIAL ELECTROLITIC CAPACITOR	4700 µF	25 V	C22
56	9322	SLOW FUSE		2 A	F1, F2, F3
57	2695	JUMPER3			J11, J12
58	0985	RED INTERMITTENT LED			L1
59	0644	RED FIXED LED			L2, L3, L4, L5, L6, L7, L8, L9
60	2246	MOC3010			OPT1, OPT2
61	2347	NEON			NEON
62	2303	NPN BC337			Q4
63	9235	NPN BC548			Q1, Q2, Q3, Q5, Q6
65	2348	PNP BC557B			Q7
66	1478	MALE PIN 2.54			TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12
67	9284	BOARD RECTIFIER B8OC1500/1000			PR1
68	0988	TOP ADJUSTING POTENTIOMETER	1K		P6, P9
69	1492	TOP ADJUSTING POTENTIOMETER	5K		P3
70	1493	TOP ADJUSTING POTENTIOMETER	10K		P5, P7, P8, P10, P11, P13, P14
71	2349	TOP ADJUSTING POTENTIOMETER	22K		P2
72	0962	TOP ADJUSTING POTENTIOMETER	500 Ω		P12
73	2252	RELE FINDER C.I. 3022	12 V	2 CIRC.	RL1
74	9231	RESISTORS NETWORK 9 PINS	8x4K7		AR1, AR2

ITEM	*REF.*	*DESCRIPTION*	*VALUE*	
75	1501	TRIAC TBA16		TRC1, TRC2
76	2248	QUARTZ CRISTAL	12 MHz	X1
77	7648	ZUMBADOR SONICAL	12 V	Z1
78	0822	LED FIJO VERDE		L9
79	1554	SOCKET DIP 8		
80	9239	SOCKET DIP 20		
81	5121	SOCKET DIP 40		
82	1556	SOCKET DIP16		
83	7573	SOCKET DIP 6		
84	1602	PORTAFUSES		
85	9323	DISIPATOR 20 x 20		
86	6116	ELECTROLUMINISCENCE DISPLAY		
87	1301	CASQUILLO NYLON 5 mm		
88	1285	CASQUILLO NYLON 8 mm		
89	1284	SCREW DIN 7985 M3x10		
90	1360	NUT DIN 934 M3		
91	2325	PRINTER DISPLAY		
92	0826	RESISTOR	180 1/4 W	RD1, RD2
93	2350	ZENER 7,5 V	ZP07V5	DZ1, DZ2

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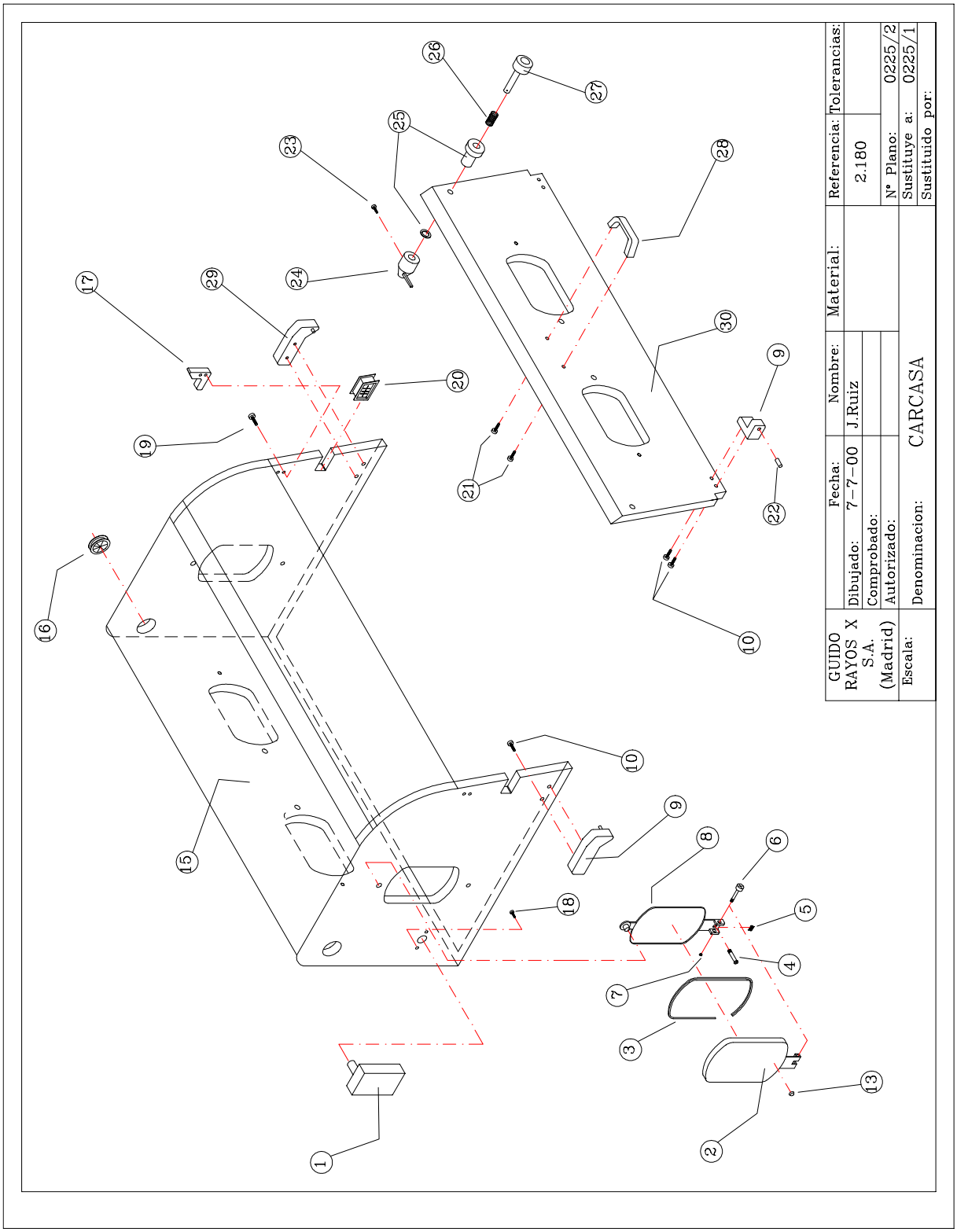
ITEM	REF.	DESCRIPTION	VALUE		
1	1524	RESISTOR	220 Ω	1/4 W	R9
2	0967	RESISTOR	100K	1/4 W	R1, R2, R3, R6
3	1526	RESISTOR	470 Ω	1/4 W	R8
4	7782	RESISTOR	1K	1/4 W	R7
5	5118	RESISTOR	150K	1/4 W	R4
6	5160	RESISTOR	300K	1/4 W	R5
7	1554	SOCKET			U1, U2
8	2189	AIR SENSOR PLASTIC HOLDER			
9	2251	I.C. CA3140E			U1, U2
10	9318	CONNECTOR 5 PIN MALE 2.54			J2
11	2801	LATERAL ADJUSTMENT POTENCIOMETER 43P			P1
12	2344	CERAMIC CAPACITOR RASTERS 5	1 MF		C5
13	7749	POLYESTER CAPACITOR	100 nF		C1, C2
14	1435	DIODE 1N4148			D2
15	2358	TEMPERATURE SENSOR LM-35-CAZ			Q1
16	2803	HUMIDITY SENSOR HIH-3605-A			
17	2780	HUMIDITY BOARD			
18	2802	PRINTER BOARD LN385Z-1,2			D1
19	2465	SIL			
20	9304	ZENNER	5,1 V		Z1
21	5053	MALE PIN			TP1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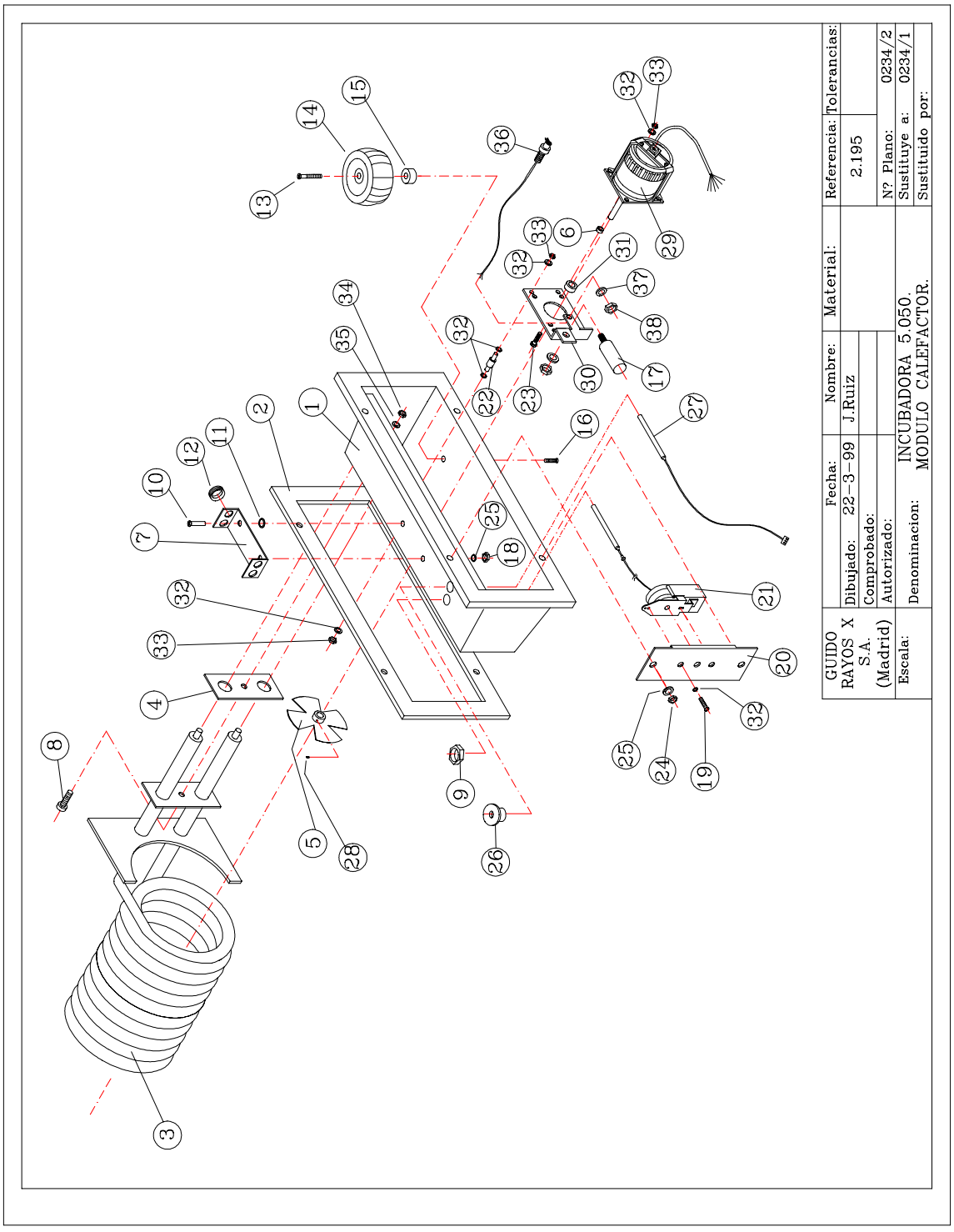
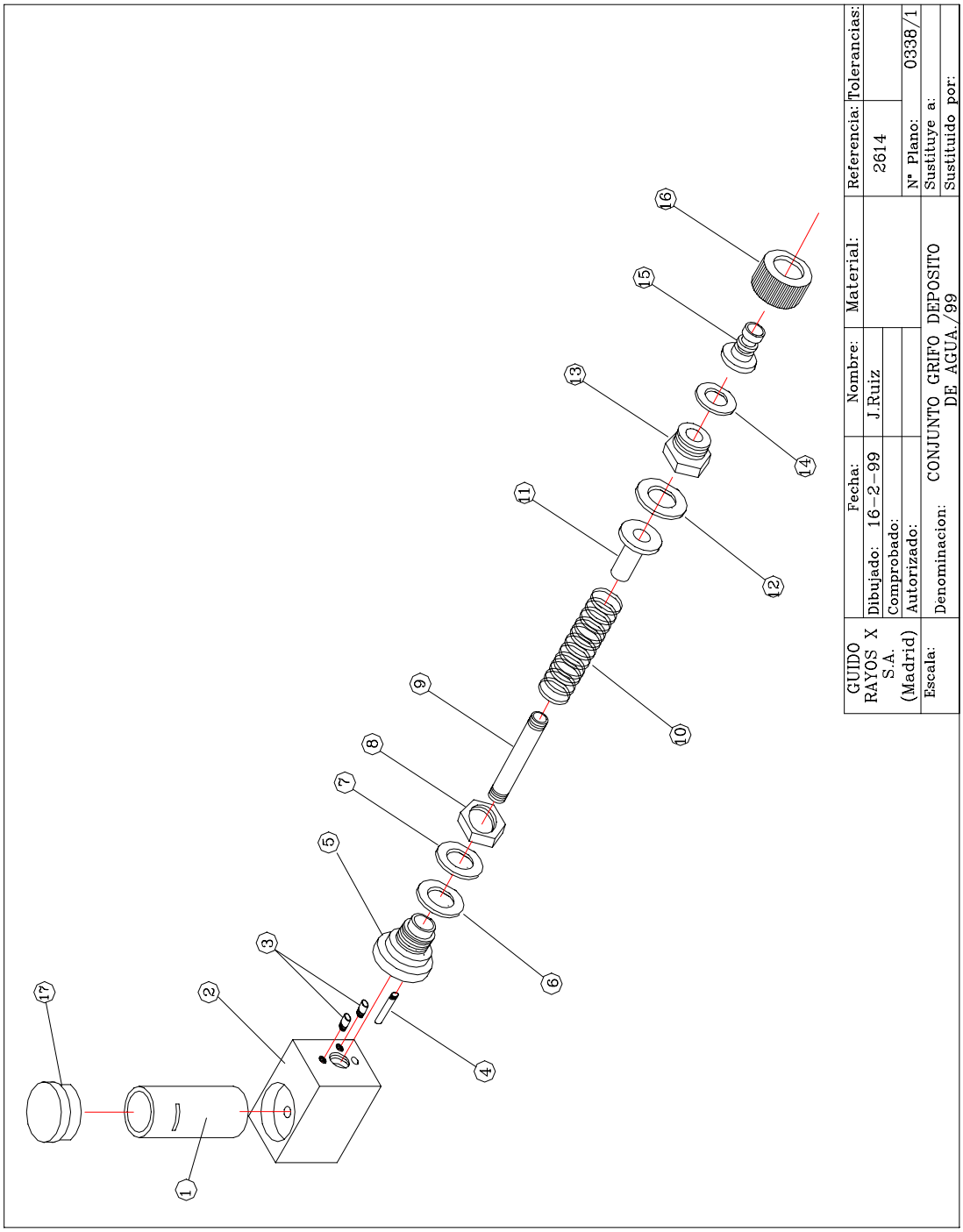
Escala:
Fecha:
Dibujado: 7-7-00
Comprobado:
Autorizado:
Nombre:
J.Ruiz
Material:
Denominacion: CARCASA
Referencia: Tolerancias:
2.180
Nº Plano: 0225/2
Sustituye a: 0225/1
Sustituido por:

ITEM	*REFERENCE*	*DESCRIPTION*
1	2452	HUMIDITY TEMPERATURE SENSORS
2	2213	HOLE DOOR
3	2263	GASKET
4	1273	SCREW DIN 965 M4x10
5	1236	SPRING
6	1309	SCREW DIN 912 M5x45
7	1340	LOCK NUT DIN 985 M5
8	2212	FLANGE
9	2269	LEFT SHAFT
10	1333	SCREW DIN 7985 M4x16
13	2265	BUMPER
15	2199	HOOD
16	2204	ROUND DIAPHRAGM
17	2216	LOCKING END
18	2197	SCREW DIN 7981 M4x19
19	7597	SCREW DIN 7985 M3x16
20	2205	LATERAL DIAPHRAGM
21	7566	SCREW DIN 966 M5x16
22	2267	AXLE FEMALE SEAT
23	1332	SCREW DIN 7985 M3x8
24	2215	LOCK
25	2231	LOCKING SEAT
26	2202	LOCKING SPRING
27	2217	LOCKING KNOB
28	1103	HANDLE
29	2268	SHAFT ASSEMBLY, RIGHT
30	2201	FRONT DOOR


GUIDO RAYOS X S.A. (Madrid)
Fecha:
Dibujado: 22-3-99
Comprobado:
Autorizado:
Escala:
Nombre:
J.Ruiz
Material:
Denominacion: INCUBADORA 5.050. MODULO CALEFACTOR.
Referencia: 2.195
Tolerancias:
Nº Plano: 0234/2
Sustituye a: 0234/1
Sustituido por:

ITEM	*REFERENCE*	*DESCRIPTION*
1	1116	HEATING BOX
2	1197	GASKET
3	2405	HEAT COIL
4	2289	GASKET
5	1105	FAN BLADE
6	1147	SPACER
7	1207	BULB CRADLE
8	0546	SCREW DIN 912 M6x20
9	1358	JAM NUT
10	1294	SCREW DIN 7985 M5x12
11	7561	WASHER DIN 137 M6
12	7570	GASSKET
13	2171	SCREW M4x38
14	2401	TRANSFORMER
15	2282	SPACER
16	1273	SCREW DIN 965 M4x10
17	2463	CAPACITOR MOTOR 1MF
18	1340	NUT M5 DIN 985
19	1283	SCREW DIN 7985 M4x10
20	2288	THERMOSTAT HOLDER PLATE
21	1247	ALARM THERMOSTAT
22	1265	MOTOR MOUNT STUD M4 10 mm
23	1333	SCREW M4x16 DIN 7485
24	8028	NUT M5 DIN 934
25	1165	WASHER M5 DIN 125
26	0994	TEFLON SPACER HOLDER LEDS SENSOR
27	7703	LEDS SENSOR
28	2173	SCREW M4x5 DIN 916
29	2740	FAN MOTOR
30	2429	MOTOR MOUNTING PLATE

ITEM	REFERENCE	DESCRIPTION
31	1192	SEAL
32	1159	WASHER DIN 6798J M4
33	1681	LOCK NUT DIN 934 M4
34	1346	NUT M6 DIN 982
35	1166	WASHER M6 DIN 125
36	7538	FAN MOTOR SENSOR
37	1171	GROWER WASHER M8 DIN 127
38	7688	NUT M8 DIN 439


GUIDO RAYOS X S.A. (Madrid)
Fecha:
Dibujado: 16-2-99
Comprobado:
Autorizado:
Nombre:
J.Ruiz
Material:
Referencia: 2614
Tolerancias:
Nº Plano: 0338/1
Sustituye a:
Sustituido por:
Escala:
Denominacion: CONJUNTO GRIFO DEPOSITO DE AGUA./99
1
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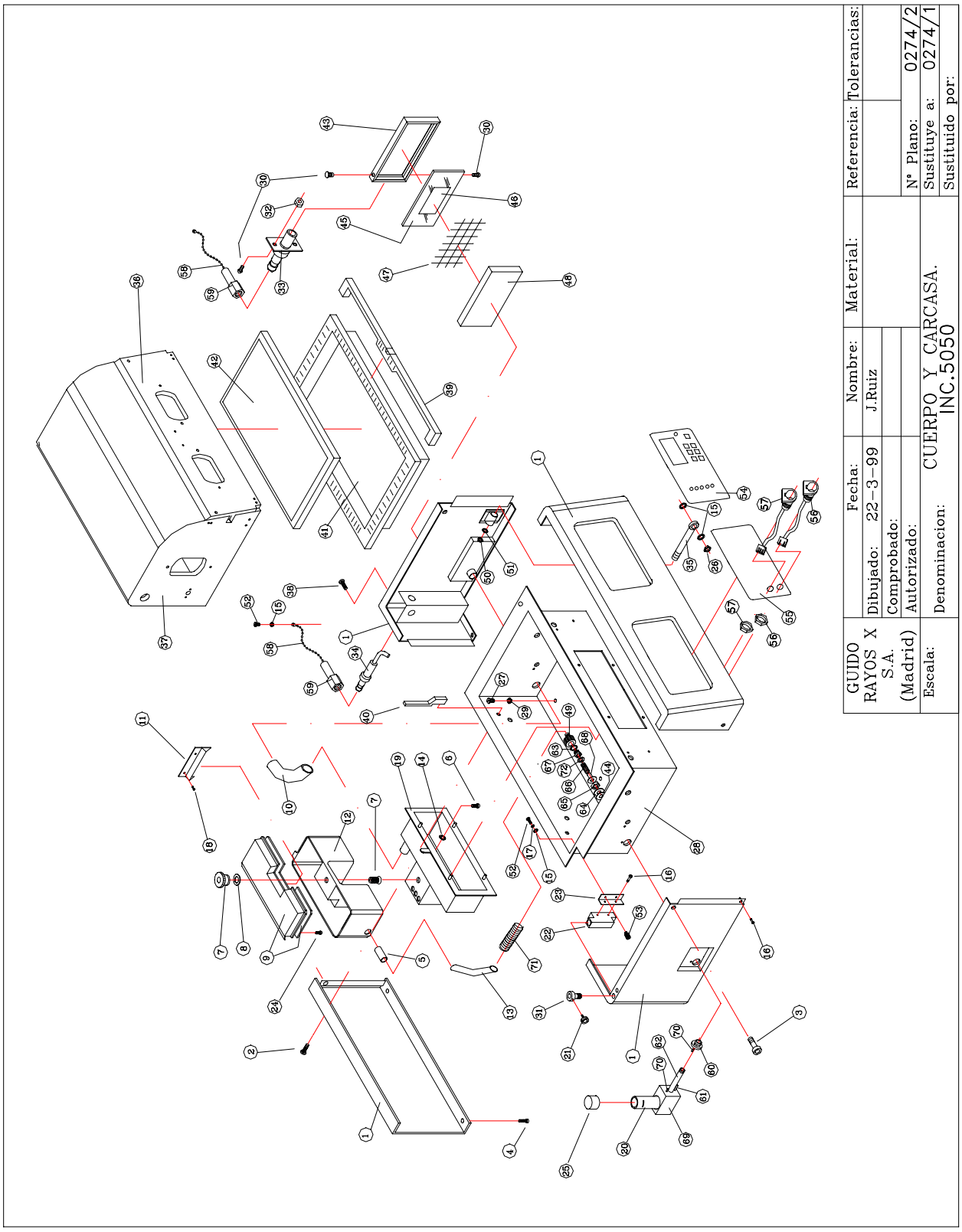
17

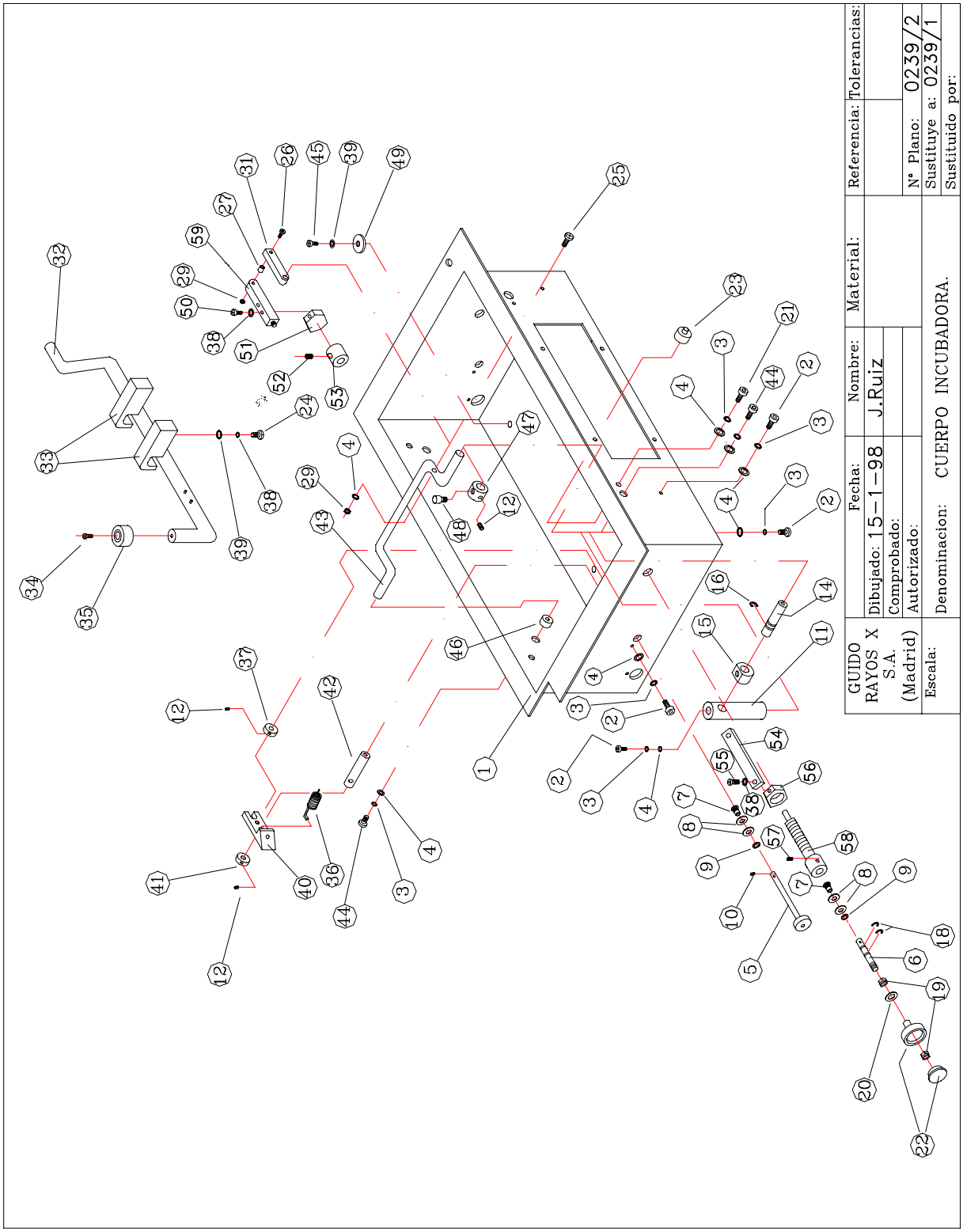
ITEM	*REFERENCE*	*DESCRIPTION*
1	2182	WATER LEVEL
2	2641	WATER FILLING BODY
3	2645	BULON ROSCADO M6x13 GRIFO
4	2646	BULON ROSCADO M6x41 GRIFO
5	2651	PASAMUROS CONJUNTO GRIFO
6	2656	WASHER BOLT 18,25x32x1 mm
7	2642	WASHER 18,25x32x2 mm
8	2653	NUT M18x100
9	2647	BOLT SPACER
10	2649	BOLT SPRING
11	2644	BOLT SPACER TOP
12	2643	BACK BOLT WASHER 13x18x2
13	2654	NUT CONECTION BOLT RACORD
14	2657	FIXING BOLT RACORD 2,62x11,9
15	2652	CONECTION RACORD BOLT TUBE
16	2652	CONECTION RACORD BOLT TUBE
17	2440	WATER BOLT TEFLON CAP


GUIDO RAYOS X S.A. (Madrid)
Fecha:
Dibujado: 22-3-99
Comprobado:
Autorizado:
Escala:
Nombre:
J.Ruiz
Material:
Denominacion:
CUERPO Y CARCASA.
INC.5050
Referencia:
Tolerancias:
Nº Plano: 0274/2
Sustituye a: 0274/1
Sustituido por:

ITEM	*REFERENCE*	*DESCRIPTION*
1	2280	OUTER BODY (4 PCS.)
2	2369	REAR SCREW
3	2370	SIDE SCREW
4	9317	SCREW DIN 965 M4x8
5	2371	WATER TANK INLET
6	1315	SCREW DIN 7985 M5x10
7	1266	WATER TANK LOCK NUT / SCREW ASSY.
8	2456	NYLON WASHER M7
9	2432	WATER TANK LID
10	2261	AIR SILICONE HOSE
11	1137	WATER TANK FLANGE
12	2431	WATER TANK
13	2299	SILICONE TUBE
14	1165	WASHER DIN 125 M5
15	1157	WASHER DIN 125 M4
16	1705	SCREW DIN 7985 M4x8
17	1160	WASHER M4 DIN 127
18	7837	SCREW DIN 7981 M4x6,5
19	2270	HEATING PACK HOUSING
20	2182	WATER LEVEL
21	1744	I.V. STAND LOCK
22	2790	I.V. STAND LOWER HOLDER
23	2446	I.V. STAND HOLDER FIXING PLATE
24	2107	SCREW DIN 7982 M4x6,5
25	2440	CAP
26	1344	NUT M4
27	1334	SCREW DIN 7985 M4x25
28	2230	INNER BODY
29	0664	NYLON WASHER 12x4x2
30	1700	SCREW DIN 965 M3x6
31	2789	I.V. STAND UPPER HOLDER

ITEM	REFERENCE	DESCRIPTION
32	1360	NUT M3
33	2367	85% OXYGEN INLET
34	2366	35 % OXYGEN INLET
35	2391	FRONT DOOR SHAFT
36	2201	FRONT DOOR
37	2199	HOOD
38		SCREW W3/16 x 2
39	1225	BED SPACER
40	1206	HOOD FASTENING
41	1106	BED
42	1122	MATTRESS
43	2361	FILTER RETAINER FRAME
44	2656	PLASTIC WASHER 92x18,25x1
45		PLASTIC COVER
46	2314	FILTER LABEL
47		FILTER RETAINER
48	1155	AIR FILTER
49	2652	CONNECTION RACORD WATER TUBE
50	1346	LOCK NUT DIN 985 M6
51	1166	WASHER DIN 125 M6
52	1277	SCREW DIN 7985 M4x12
53	0854	NUTSER M-4
54	2319	KEYPAD LABEL
55	2318	INSTRUCTIONS LABEL
56	2706	2 BLACK PIN CONNECTOR
57	2704	3 PIN CONECTOR
58	1144	CAP CHAIN

ITEM	REFERENCE	DESCRIPTION
59	2365	INLET CAP 35 AND 85%
60	2651	PASAMUROS BOLT SET
61	2646	BULON ROSCADO LARGO
62	2647	BOLT SPACER
63	2657	FIXING BOLT RACORD 2,62x11,9
64	2642	FRONT WASHER 32x18,5x2
65	2653	NUT
66	2649	BOLT SPRING
67	2654	NUT CONECTION BOLT RACORD
68	2644	BOLT SPACER TOP
69	2641	WATER FILLING BODY
70	2645	BULON ROSCADO M6x13 GRIFO
71	2648	INSIDE WATER TUBE SPRING
72	2643	BACK BOLT WASHER 13x18x2


GUIDO RAYOS X S.A. (Madrid)
Fecha:
Dibujado: 15-1-98
Comprobado:
Autorizado:
Escala:
Nombre:
J.Ruiz
Material:
Referencia:
Tolerancias:
Nº Plano: 0239/2
Sustituye a: 0239/1
Sustituido por:
Denominacion: CUERPO INCUBADORA.

ITEM	*REFERENCE*	*DESCRIPTION*
1	2230	INNER BODY
2	0552	SCREW DIN 912 M5x12
3	1391	WASHER DIN 127 M5
4	1165	WASHER DIN 125 M5
5		SHAFT, HUMIDITY
6	2222	SHAFT, TILTING KNOB
7	2362	FASTENER
8	1726	PLASTIC WASHER 10 mm
9		FASTENER LOCK NUT
10	2223	SPECIAL SCREW DIN 912 M4x6
11	2235	TILTING ASSEMBLY STAND
12	7719	SCREW DIN 916 M4x6
14	2241	SHAFT, TILTING DEVICE
15	2242	HOLDER
16	2245	FASTENER 8 mm
18	7577	FASTENER 5 mm
19	1054	LOCK NUT DIN 934 M6
20	1166	WASHER DIN 125 M6
21	2220	SCREW DIN 912 M5x10
22	2243	TILTING KNOB
23	2219	TILTING POSITIONING END
24	1691	SCREW DIN 912 M4x10
25	2364	TILTING SHAFT SCREW
26	0626	SCREW DIN 912 M5x30
27	2421	SPACER
29	1340	LOCK NUT DIN 985 M5

ITEM	*REFERENCE*	*DESCRIPTION*
31	2232	TILTING CONNECTING ROD
32	2250	HUMIDITY SHAFT
33	2372	STAND
34	2237	SCREW DIN 965 M5x20
35	2229	SLIDING TIP
36	2224	SPRING
37	2228	SPACER
38	1160	WASHER DIN 127 M4
39	1157	WASHER DIN 125 M4
40	2373	HUMIDITY CONTROL SLIDING
41	2227	SLIDING BUMPER
42	2225	SLIDING SHAFT
43	2236	TILT BAR
44	1304	SCREW DIN 912 M5x16
45	1334	SCREW DIN 7985 M4x25
46	2238	TILT BAR SPACER
47	2239	TILT BAR POSITIONER
48	2218	TILT BAR POSITIONER STOPER
49	0664	WASHER 12x4x2
50	1333	SCREW DIN 7985 M4x6
51	2544	SPACER
52	1302	SCREW DIN 916 M5x6
53	2545	TILTING POSITIONER STOPER
54	2548	TILTING STAND
55	1283	SCREW DIN 7985 M4x8
56	2546	TILTING , LEFT
	2547	TILTING, RIGHT

ITEM	REFERENCE	DESCRIPTION
57	1684	SCREW DIN 916 M4x8
58	2549	TILTING FEED SCREW, LEFT
	2550	TILTING FEED SCREW, RIGHT
59	2233	TILTING CONNECTING ROD

WARRANTY

GUIDO RAYOS X S.A. (hereinafter referred to as GRX) warrants that each NESTORET Incubator will be free from defects in material and workmanship under normal use and service for a period of one year from the date of delivery by GRX to the first purchaser. If any such defect occurs during the warranty period, the aforesaid purchaser should communicate directly with GRX agent. If returned, GRX's agent will arrange for repairs or replacement within the terms of warranty. The defective instrument should be returned properly packed, freight prepaid. Loss or damage in shipment to GRX agent shall be at purchaser's risk. This same warranty is made for a period of thirty days with respect to the expandable parts.

In no event shall GRX be liable for any incidental, indirect, or consequential damages in connection with the purchase or use of the Incubator. This warranty shall not apply to, and GRX shall not be responsible for any loss arising in connection with the purchase or use of any such Incubator wich has been altered by anyone other than an authorized GRX representative or altered in any way so as, in GRX's judgement, to affect its stability or reliability or wich has been subject to misuse, negligence, or accident, or wich has been used otherwise than in accordance with the instructions furnished by GRX. This warranty is in lieu of all other warranties, express or implied, and of all other obligations or liabilities on GRX's part, and GRX neither assumes or authorizes any representative or other person to assume for it any other liability in connection with the sale of such Incubator.

GRX disclaims all other warranties, express or implied, including any implied warranty of merchant ability or of fitness for a particular purpose or application other than those expressly set forth in the appropiate product labelling or user information manual.

Manufactured by:
GUIDO RAYOS X, S.A.
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28034 Madrid (Spain)
Tel: +34 - 91 - 358 16 25
Fax: +34 - 91 - 358 08 69
e-mail: guidorx@guidorx.com